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# **Matrix Mapping Tool (MMT)**

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*September 2005*

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# Purpose

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- Describe MMT background and current pilot efforts**
- Potential applications**
  - Support top level portfolio awareness
    - Cross-cutting data resource
  - Visibility of FoS/SoS interdependencies
  - Support a capability-based approach
    - Support system-views for capability based assessments
    - Integrate Service-specific architectures into a joint capability lexicon
    - Joint Capability Area implementation
  - Support roadmap activity
  - IPL and ACTD evaluation
  - FCB portfolio awareness



# Matrix Mapping Tool (MMT)

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- MMT is a database and supporting software to:**
  - Facilitate communication across multiple communities
  - Document relationships across existing data
  - Scope initial analysis activity, expedite data collection and reuse
- 2004 Accomplishments:**
  - Delivered spiral 1 and 2, trained and installed on user desktops
- 2005 Actions:**
  - Build on feedback from spirals one and two (user workspace and hotlinks)
  - Conduct spiral 3 pilots to define MMT utility (includes JFCOM)
  - Support additional requests: STRATCOM, TRADOC, N81, NCOE CBA
  - Identify interested sponsors
  - Determine appropriate transition and management plan



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# MMT Interface

Joint  
Functional  
Areas

Operational  
Activities

Universal  
Joint  
Task List

Systems

S&T/ACTDs

Roadmaps

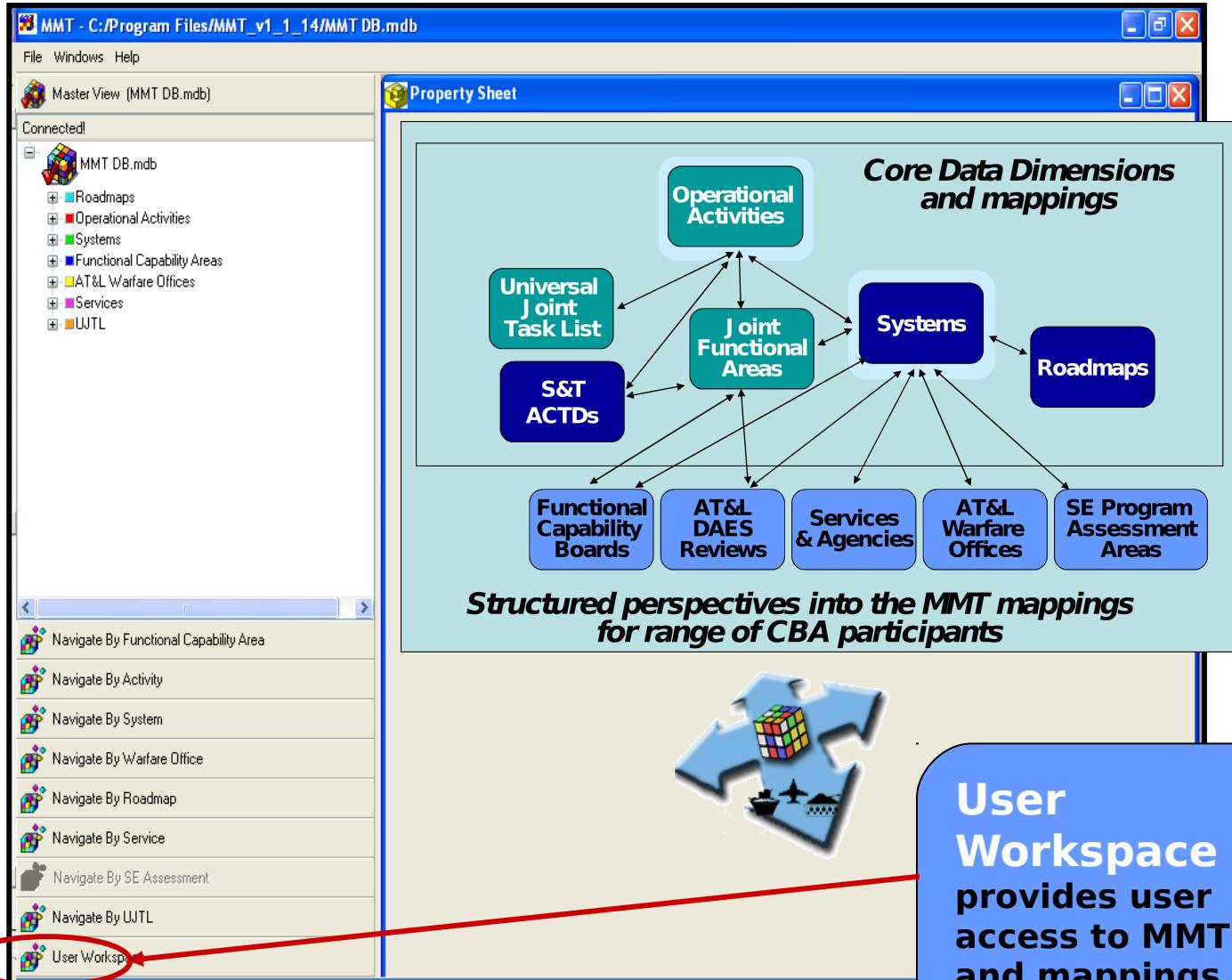
Services  
& Agencies

SE Program  
Assessments  
Areas

Functional  
Capability  
Boards

Warfare  
Offices

DAES  
Reviews



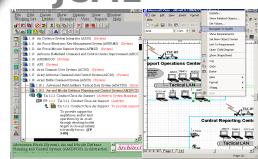
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# Hotlinks

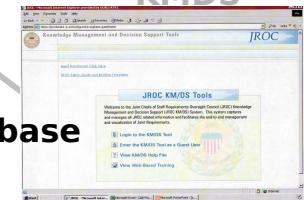
JCME



JDEIS - UJTL Database



KMDS



RDDS  
aka DTIC Program Summaries



18

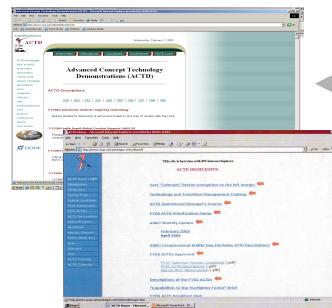
Comptroller  
Weapons System Cost Data  
Program Status



A-Plus



ACTD Websites



Universal  
Joint  
Task List

S&T  
ACTDs

Operational  
Activities

Joint  
Functional  
Areas

Systems

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Functional  
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AT&L  
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Offices

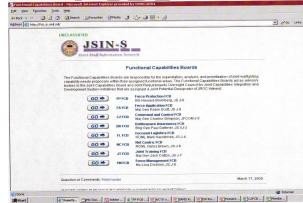
SE Program  
Assessment  
Areas

Joint Data System

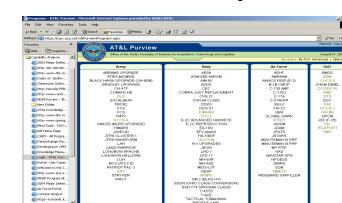


Roadmaps

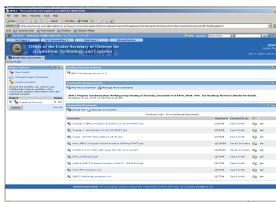
FCBS



Purview/DAMIR



AT&L Portal SE Community



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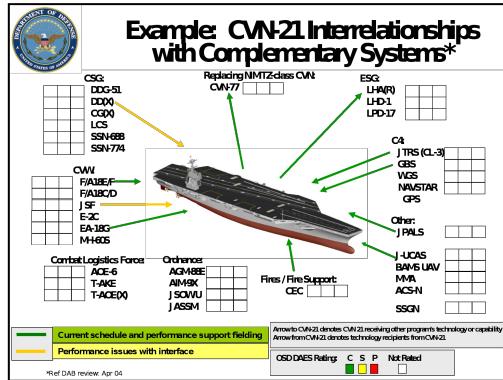
# Current MMT Pilot Activities

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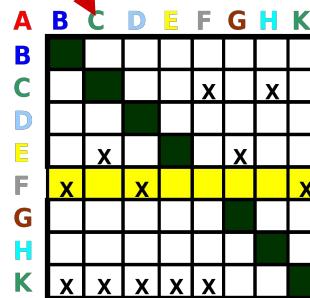
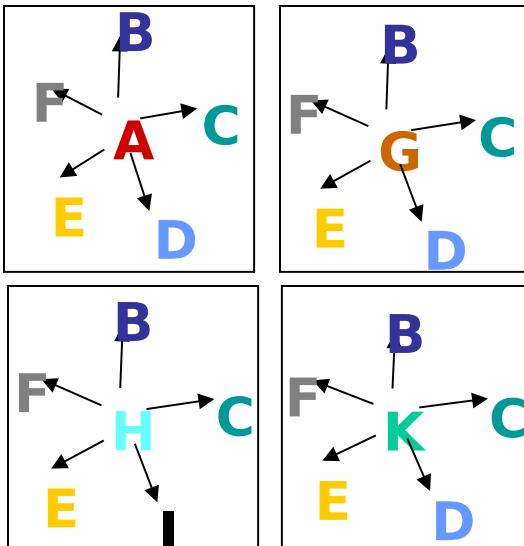
- Support to Preparation of AT&L **DAB Context Slides**
- Integration with **Program Elements**
- Integrating with JFCOM Joint Capabilities Mapping Environment (**JCME Architecture**)
- Support to **Roadmaps** in AT&L and J8
- Support Homeland Defense **QDR Tasking**
- Implementation of **21 Joint Capability Areas**



# MDAP Interdependencies



## AT&L Context Slides



F?

- Context slides showing system interdependencies are prepared for each DAB review

- Each program is handled as new case
- Data is recorded on DAB slide

- To date

- ~25+ DAB context slides
- Data incorporated into MMT
- Profiles of experience to date drafted

- MMT supports

- Visibility into dependencies
- Developing additional slides
- Hotlinking to completed slides
- Developing top level profiles



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# MDAP Interdependencies

MMT 3.0.07 Beta - C:\Documents and Settings\jdahmann\Desktop\MMT\MMT Pilots\JMT MMT MMT DB with iam( Cross Reference).mdb

File Metrics Help

Master View (JMT MMT DB with iam( Cross Reference).mdb)

Navigate By System

?

Systems

- (All Systems)
- 120mm (M829A2)
- 120mm (M829E3)
- 120mm (M830A1)
- 120mm (XM943)
- 155mm M795 High Explosive
- 2.75 Inch Rocket Systems
- 21st-Cent CVX
- 40mm Canister Round for MK19
- 60K Low Vel Airdrop
- 9mm Side Arm
- A-10 Warthog (DSM)
- A-10 Warthog
- A-10 Warthog (CMS)
- A-10 Warthog (GPS)
- A2C25 - Army Airborne C2 System
- AADC - Area Air Def, Cmdr
- AAFARS - Adv. Aviation Fwd Area Refuel
- AAR-44 MAWS - Missile Warning Sys.
- AAR-47 Missile Warning System
- ABCS - Army Battle Command Sys.
- ABL - Airborne Laser
- AC-130H Spectre Gunship
- ACADA - Auto. Chemical Agent Alm
- ACDS
- ACIPS - Adv. Integrated Collective Protect Sys.
- ACPG - Adv. Chem. Protect. Garment
- + ACS - Aerial Comm
- ACS-N - Aerial Com
- ADC MK4 MOD 0

System Name: ACS - Aerial Common Sensor

Program: Aerial Common Sensor

Description: The Aerial Common Sensor is a combination and evolution of two existing systems: Guardrail and Airborne Reconnaissance Low. The concept is to have

Service/Agency: USA

ACAT: PMDAP

PNO: PNO 371 / 0307207N

MDAP Interdependencies: Yes

PE Interdependencies: Yes

WO: Land Warfare

Primary Functional Capability Board: BA

Supporting Functional Capability Board: C2,FA

Roadmap: AMD,JBMC2

Interested FA: BA,FP,NC

IROC Interest:

Interdependent Systems \ Other Reviewed Systems \

Name	DAB Review	Program	Description	ACAT	PNO	WO
F-35 JSF 10/12/2004	F-35 JSF 10/12/2004	F-35 - Joint Strike	The F-35 JSF is a fixed wing, single engine, multi-mission aircraft designed for air superiority, strike, and electronic warfare. It features stealth technology and advanced avionics.	ID	PNO 198	Air Warfare
MMA 5/28/2004	MMA 5/28/2004	Multi-mission Maritime Aircraft (MMA)	The Multi-mission Maritime Aircraft (MMA) is a carrier-based fighter jet designed for anti-surface warfare, anti-air warfare, and electronic warfare. It features stealth technology and advanced avionics.	PMDAP	PNO 334	Naval Warfare

Show Properties

Show Comparables

MDAP Interdependencies

Show PE Interdependencies

Show Interdependencies

DAB Reviews

Navigate By UJTL

Navigate By Joint Integrated Activity Set

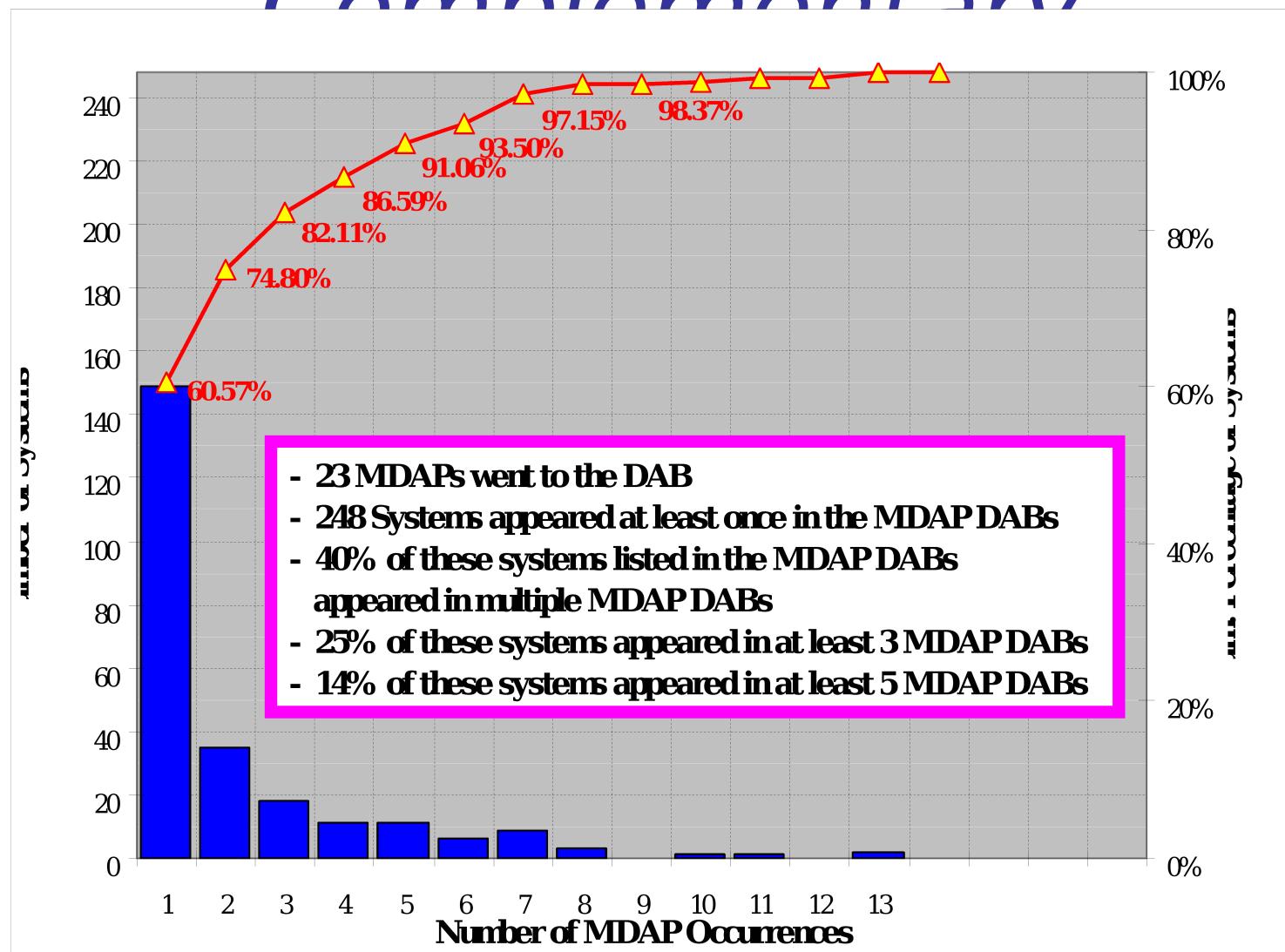
Navigate By Functional Area

**Hotlink to DAB Slides**



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# Numbers of Complementary

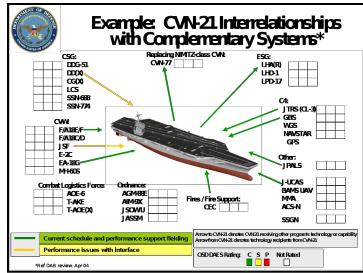


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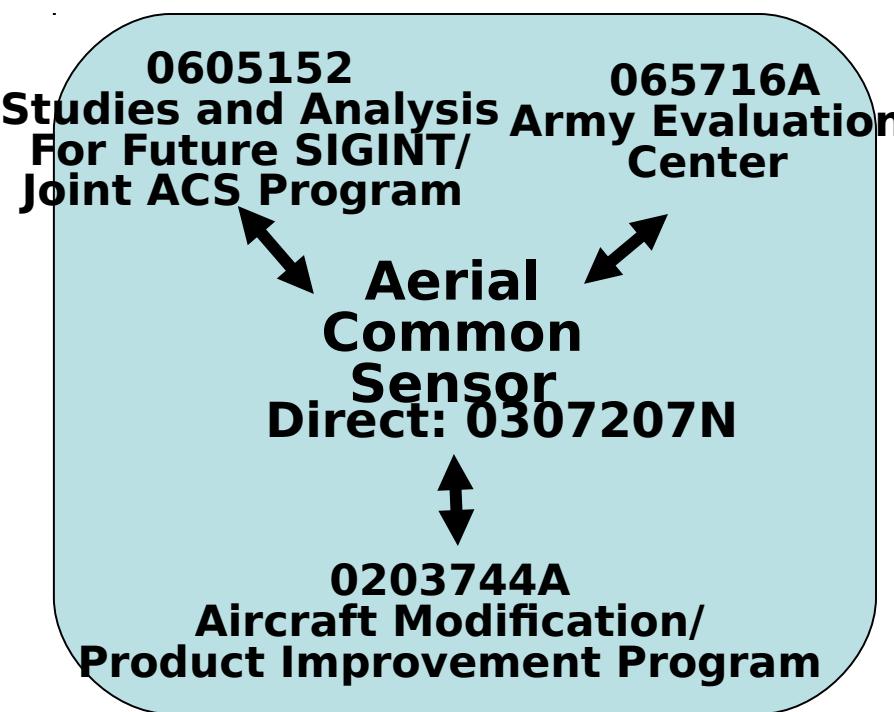


# PE Interdependencies

## MDAP Interrelationships



## Added MMT Data and Relationship



- Analog to MDAP interdependencies
- ARA-led team to identify MDAP PE interdependencies
- Added PEs for MDAPs to MMT
  - Both Direct and Indirect
  - Data provided by AT&L ARA led team
- Provided MMT key data to allow for linking to resource information



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## AT&amp;L Context: PE interdependencies

MMT 3.0.07 Beta - C:\Documents and Settings\jdahmann\Desktop\MMT Databases\JMT MMT DB with iamd - Staging (MMT 3.0.07 Compliant includes Met

File Metrics Help

Master View (JMT MMT DB with iamd - ...)

Navigate By System

?

Systems

- (All Systems)
- 120mm (M829A2)
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- ABC5 - Army Battle Command Sy
- ABL - Airborne Laser
- AC-130H Spectre Gunship
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- ACDS
- ACIPS - Adv. Integrated Collecti
- ACPG - Adv. Chem. Protect. Gar

ACS - Aerial Common Sensor

Program Aerial Common Sensor

Description The Aerial Common Sensor is a combination and evolution of two existing systems: Guardrail and Airborne I class jet as a platform for many different types of sensors including: Electro-Optical (EO), Infrared (IR), Co USA

Service/Agency PMDAP

ACAT PNO 371 / 0307207N

MDAP Interdependencies Yes

PE Interdependencies Yes

WO Land Warfare

Primary Functional Capability Board BA

Supporting Functional Capability Board C2,FA

Roadmap AMD, JBMC2

Interested FA BA,FP,NC

Joint Program Designator JROC Interest

KMDS Doc Number 03-50052414-00

JCA Joint Maritime Control Operations, Joint Land Control Operations, Observation & Collection, Knowledge Sharing Awareness, National Maritime Defense, National Land Defense, National Air & Space Defense

DAES Group A

Additional Data Sources RDDS Database, KMDS, J8 Program Status

Show Properties

Show Comparables

MDAP Interdependencies

Show PE Interdependencies

Navigate By UJTL

Navigate By Joint Integrated Activity Set

Navigate By Functional Area

Navigate By Service or Agency

Navigate By Warfare Office

Navigate By ACTD

Navigate By Roadmap

PE Number	PE Name	Type
0307207N	Aerial Common Sensor	Direct
0605152N	Studies and Analysis Support for Future SIGINT/Joint ACS Program	Indirect
0605716A	Army Evaluation Center	Indirect
0203744A	Aircraft Modifications/Product Improvement Program	Indirect



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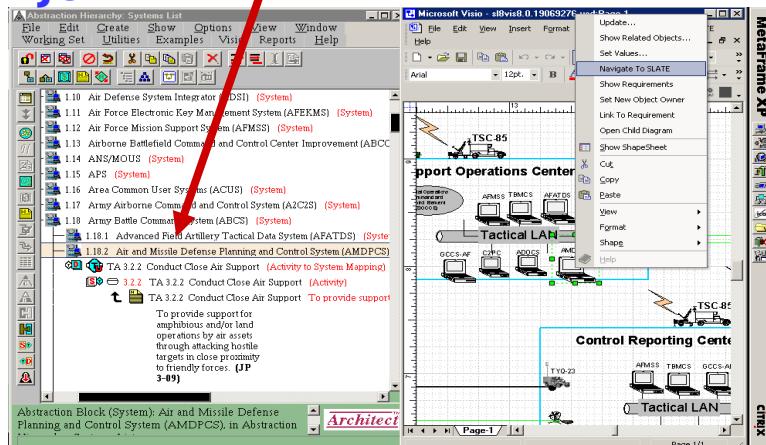
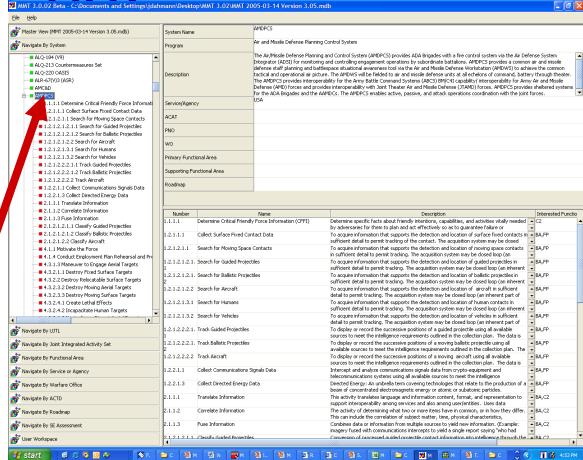
# Integrating with Architectures JFCOM Joint Capabilities Mapping Environment (JCME)

**Example:**

**Air/Missile Defense Planning and Control System (AMDPCS)**

**JCME**

**MMT**



**❑ JCME is a JFCOM requirements and architecture tool**

- Defines implementation of tasks and systems in context of the JTF Core HQs architecture
- Includes joint mission thread representation (JBMC2 Roadmap)

**❑ Two tools make a good set**

- Provides JCME users context for tasks and systems (e.g. functional areas, roadmaps, etc.)
- Provides MMT users detail on how systems and tasks fit in this joint architecture

**❑ By linking the two, users of each get a broader context**

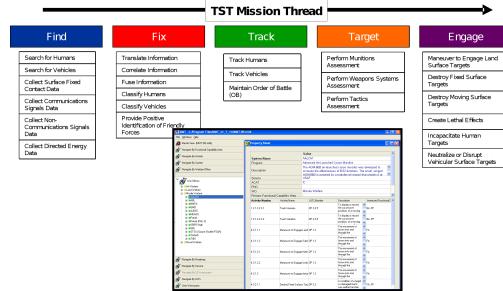
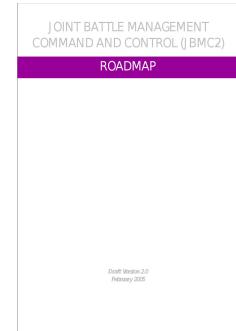
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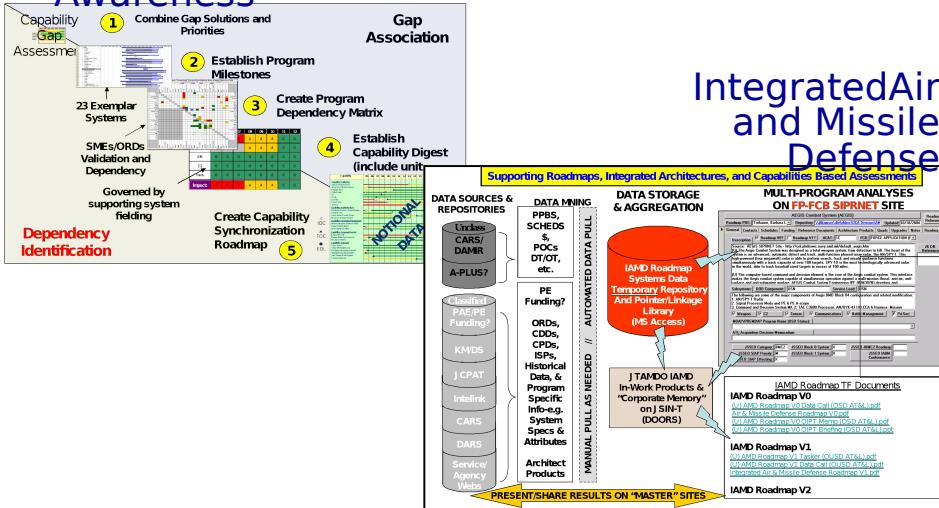
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# **Roadmap Support**

JBMC2



# Battlespace Awareness



 JBMC2

- First order assessment of Time Sensitive Targeting Mission thread done for AT&L
  - Cross mission thread review
  - Possible extensions to support other mission threads and added top level synchronization data

## **Battlespace Awareness**

- “Poor Man’s Roadmap”
  - Supported systems identification

IAMD

- #### ▪ **Plans for hotlinks and thread assessment (IPMC2)**

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# QDR Example Support

1	<b>Achieve maximum awareness of threats</b>
11	Focus and orient intelligence efforts on homeland defense operations
12	Improve human intelligence collection and ensure a comprehensive analysis and
13	Detect, identify and track objects in the air and maritime approaches and within
14	Ensure Shared Situational awareness within DOD and with domestic and
2	<b>Interdict and defeat threats at a safe distance</b>
21	Interdict and defeat national security threats in the maritime, air and land
2.1	Maritime operational domain
2.1	Air operational domain
2.1	Land operational domain
3	<b>Provide mission assurance</b>
3.1	Protect DoD domestic personnel and installations from CBRNE attacks
3.1	Detect and identify threats (sense)
3.1	Provide early warning (shape)
3.1	Protect forces and installations (shield)
3.1	Protect forces and installations (shield)
3.1	Sustain operations during and after a CBRNE attack in the US
3.2	Ensure crisis management and DoD continuity preparedness
3.2	Enhanced information management and communications
3.2	Improved survivability and flexibility of military command and control capabilities
3.2	Maintain continuity of operations
3.3	Implement a protective risk management strategy for defense of critical
3.4	Ensure preparedness of the Defense Industrial Base
3.5	Conduct protection operations for designated national critical infrastructure
3.5	DoD infrastructure
3.5	Non-DoD infrastructure
4	<b>CBRNE consequence management</b>
4.1	When directed, assist in consequence management for CBRNE mass casualty
5	<b>Enhance US and International Capabilities for Homeland Defense</b>
5.1	Improve interagency planning and interoperability
5.2	Leverage DoD expertise to enhance the US civil sectors prevention,
5.3	Enhance international partner capabilities for homeland defense and homeland

• AT&L tasked to identify systems which could support Homeland Defense (HLD) capabilities

• MMT used to identify initial set of systems which could contribute to these capabilities

• AT&L team refined systems list for

The screenshot shows the MMT user workspace interface. A central window displays a list of selected activities, each with a checkbox and a brief description. To the right, a larger window titled 'System Performance Data for > 1.1 Awareness, refocus intel ops on HLD' lists various systems with their descriptions and assigned roles (SDEV, ACAT, PRO, WO, MA, RWD). A large black arrow points from the left side of the slide towards the MMT interface.

This screenshot shows the 'User Workspaces' section of the MMT user workspace. It lists several workspaces, each with a checkbox and a brief description. A large black arrow points from the center of the slide towards this workspace list.

This screenshot shows the 'User Workspaces' section of the MMT user workspace, similar to the previous one but with different content. A large black arrow points from the center of the slide towards this workspace list.

- **Capabilities identified based on HLD strategy**
- **Capabilities were mapped to activities in the MMT user workspace**
- **MMT Activities - Systems mappings generated candidate systems**

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# *A Common Taxonomy Across DoD*

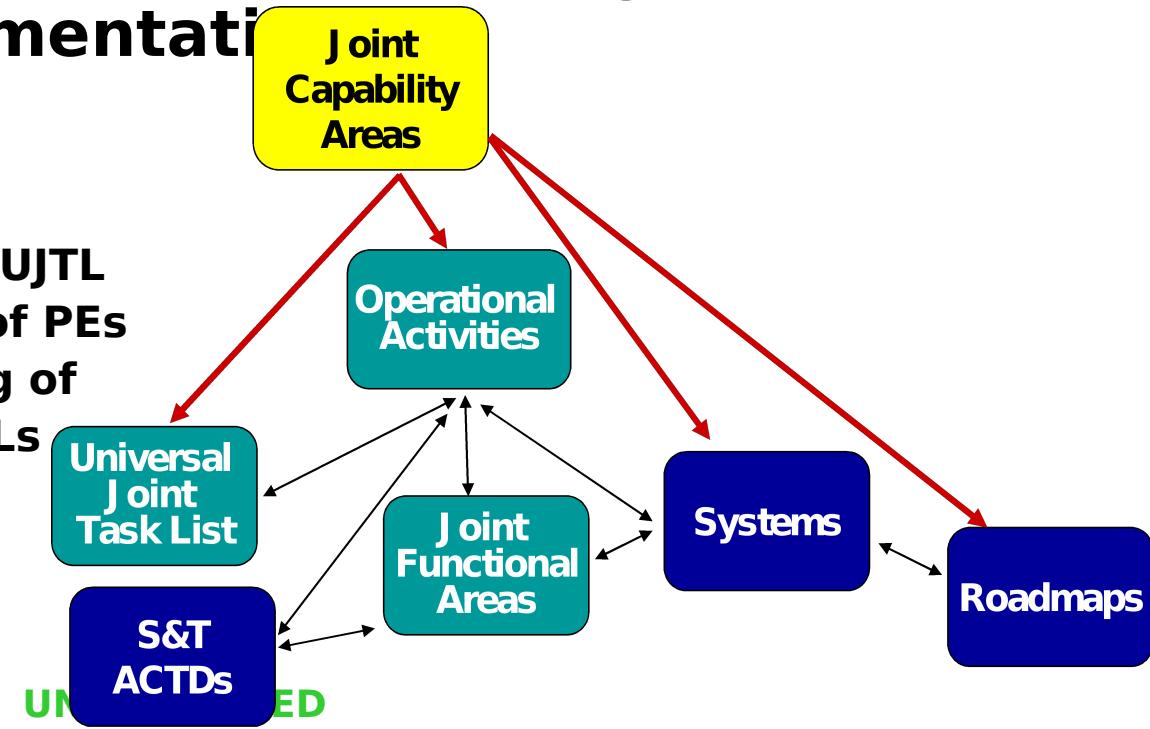
- ## SECDEF memo directs Joint Capability Area implementation

- AT&L shall incorporate into DAB process, capability roadmaps and technology investment decisions  
**(s: 31 July 05)**
  - MMT Includes systems, roadmaps and ACTDs

- Current MMT data has been leveraged to support JCA implementation

- # □ Common DoD Implementation

- J7, common mapping of UJTL
  - PAE, common mapping of PEs
  - FCBs - common mapping of concepts, activities, IPLs





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# Integrate JCAs into MMT

**JCAs have been added To the Master View**

**JCA associations are included in the 'Navigate by..' views, including the property sheets systems (as well as ACTDs and others...)**

**A "Navigate by JCAs" area has been added**

The image displays three windows of the MMT 3.0.02 Beta application:

- Master View (MMT DB - Staging.mdb):** Shows the main navigation pane with a red box around the "JCAs" item under "Connected to Database". A callout arrow points from this box to the text "JCAs have been added To the Master View".
- Properties View (MMT DB - Staging.mdb):** Shows the properties for the "120mm (M829A2)" system. A red box highlights the "JCA" section under "All Systems", which contains "JCA1", "JCA2", and "JCA3". Another red box highlights the "Roadmap" section, which lists "JCA1" and "JCA2". A callout arrow points from this box to the text "JCA associations are included in the 'Navigate by..' views, including the property sheets systems (as well as ACTDs and others...)".
- Navigation View (MMT DB - Staging.mdb):** Shows a hierarchical navigation tree. A red box highlights the "Navigate By JCA" item under "JCAs". A callout arrow points from this box to the text "A 'Navigate by JCAs' area has been added".



# Summary and Next Steps

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- ❑ **MMT is continuing to collect feedback from pilots and develop plans for next steps**
- ❑ **Next steps**
  - Create new MMT “Navigate by Major Acquisitions”
    - Consolidate and focus current MDAP related efforts
  - J8/FCB Portfolios and Gap Assessments
  - Prototype Use of Unique Acquisition Identifiers
  - Business Transformation -- Extension to Business Areas
  - Support Portfolio View for Corporate Decision Processes